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ABSTRACT

Three samples (N=474; N=389; N=417) of special education and mainstream teachers were asked to complete the Teacher Stress Survey (TSS). Developed for the study, the TSS consisted of questions on personal and professional characteristics and on perceived teacher stress in terms of six factors: (1) professional distress, (2) discipline and motivation, (3) emotional manifestations, (4) behavioral manifestations, (5) physiological manifestations, and (6) fatigue manifestations. Thirty project activities related to the development, implementation, and field testing of the TSS. Results of the TSS were analyzed by testing nine null hypotheses. Twenty-seven findings were made, among them that special education teachers of handicapped or handicapped and nonhandicapped students experienced significantly stronger professional distress than did mainstream teachers of either nonhandicapped or both handicapped and nonhandicapped students and that special education and mainstream teachers, when grouped according to grade level, student type, and classroom type, did not differ in perceptions of the frequency of teacher stress. Implications for future research on such topics as identification of individual needs and resources and the selection and implementation of change strategies are described. (CL)

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AN ANALYSIS OF THE RELATIONSHIP AMONG PERSONAL AND PROFESSIONAL VARIABLES AND PERCEIVED STRESS OF MAINSTREAM AND SPECIAL EDUCATION TEACHERS: FINAL REPORT

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AN ANALYSIS OF THE RELATIONSHIP AMONG PERSONAL AND PROFESSIONAL VARIABLES AND PERCEIVED STRESS OF MAINSTREAM AND SPECIAL EDUCATION TEACHERS

Vermont Teacher Stress Study Summary: Final Report

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Introduction

This report[1] presents an overview of the study design and a summary of the major findings of this study.

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Overview of the Study

This study addressed the issue of stress and its effects on special education and mainstream teachers. More specifically, the study focused on: (a) the level of stress at the end of the school year in comparison to the beginning; (b) the interrelationship between teacher perceived stress and the personal and professional characteristics of the special education and mainstream teachers; and (c) the relative contribution of the personal and professional teacher characteristics that would explain teacher stress.

The intent of this study was twofold. The initial purpose was to develop and refine an instrument that would reliably and validly assess the frequency and strength of teacher stress. At present, only a few investigators have attempted this, and have done so by examining different models of stress and burnout (Kyriacou and Sutcliffe, 1978; Cichon and Koff, 1980; Maslach and Jackson, 1981). The second purpose of this study was to expand upon existing research on stress and burnout to include the areas of both special education and regular mainstream education. At present, research comparing and contrasting both groups is very limited.

The current study is based upon and adapted from the works of Maslach and Jackson (1981), Schwab (1980), Crane (1981), Anderson (1980), and MacIntyre (1981). A variation of the burnout instrument that these investigators employed was developed, refined, named the Teacher Stress Inventory (TSI), and used in the analyses of the data and presentation of the findings related to this study.

Three samples (N = 474; N = 389; N = 417) of special education and mainstream teachers randomly selected from the Vermont State Department of Education teacher rolls were respondents in this study. Each participant was asked to complete the Teacher Stress Survey (TSS).[2] This survey consisted of two parts. In Part I, special education and mainstream teachers were asked to provide information about personal and professional characteristics such as sex, age, education level, size of community, number of years teaching experience, grade level taught, type of student taught, number of students taught, and type of classroom. The second part of the TSS provided a measure of perceived teacher stress in terms of six factors: Professional Distress; Discipline and Motivation; Emotional Manifestations; Beha-

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[2]The preliminary form of the instrument used in this study was termed the Teacher Stress Survey (TSS). The revised form reported in this study, however, was termed the Teacher Stress Inventory (TSI).

vioral Manifestations; Physiological Manifestations; and Fatigue Manifestations. For each of these factors, separate subscale scores are provided for the frequency and the strength of the feelings and events experienced by the teacher. In addition, Total Frequency, Total Strength, and Total Composite Scores were computed and reported.

The Statistical Package for the Social Sciences, (SPSS), Second Edition (Nie, et al, 1975) was used to analyze all the data related to the null hypotheses. When discussing pretest-posttest mean differences for Null Hypotheses 1 and 2, dependent or paired samples t tests were used. In order to test Null Hypotheses 3, 4, and 5, three personal and six professional variables were used to define the teacher groups. Then, a multivariate analysis of variance (MANOVA) was performed for each of the background variables, first across all the strength subscales of the TSI (note Hypothesis 3), and then across all the frequency subscales (note Hypothesis 4). Special education and mainstream teachers were compared on each of the background variables. Then oneway analyses of variance (ANOVAs) were conducted whenever the MANOVA F ratios proved significant. A conservative significance level of .001 was selected, and follow-up Tukey Tests of Honestly Significant Differences (HSD) were conducted to determine the between group differences. For Null

Hypotheses 6, 7, 8, and 9, stepwise multiple regression analyses were used to determine the extent and the fashion in which the background variables were related to the TSI subscales and scales, for the combined group of special education and mainstream teachers. Null Hypotheses 6 and 7 examined this relationship with respect to the TSI subscale scores; Null Hypotheses 8 and 9 with respect to the TSI total scores.

Status Summary of Procedures Related to Objectives A and B

Objective A

This study had two objectives. The first of these, Objective A, was related to the development of the Teacher Stress Inventory.

> Objective A: To develop and field test an instrument that would determine the relationships among personal and professional special education teacher variables and the sources and manifestations of teacher stress, among special education and mainstream teachers.

Pursuant to this Objective, and as noted in Table 1, 30 project activities were conducted. Chronologically, these activities extended from October 1, 1980 (Activity A1) to the present (Activity A30). All project activities were concluded prior to or by the projected timeline dates, with the exception of Activity A30 ("submit results for publication"). As noted in the reference list appended to this

report, twelve papers have been prepared, two have been presented in National Conferences during FY 1981-82, and five have been accepted for publication. Approximately one dozen other papers are presently being prepared during FY 1982-83. In addition, one dissertation based on the data collected for this study was prepared during FY 1981-82, and defended in July of 1982 (note enclosed manuscript). Appendix C of the dissertation examines in great detail the project activities related to Objective A. Also, various versions of the Teacher Stress Inventory were prepared for future use based on the data collected in this study. These versions are included in Appendices G, I, and J of the dissertation.

Information about the Teacher Stress Inventory has been disseminated through presentations at two national conferences (Council for Exceptional Children, April, 1981; American Education Research Association, March, 1982), and through papers submitted for publication. Twenty-eight requests for information about the Inventory have been answered. The majority of the requests have originated in American Universities, though two originated elsewhere (Israel and Australia). Presently, two doctoral students have used either the long or short forms of the Inventory in their dissertations, which involved surveys of special edu-

TABLE 1

The Timeline and Procedures Related to Objective A

ACTIVITY NUMBER	DESCRIPTION OF PROJECT ACTIVITIES	DESIGN FOR EVALUATION OF OBJECTIVES/ACTIVITIES	CURRENT STATUS OF OBJECTIVES/ACTIVITIES
A1	Make decision to "go"		Completed, Oct 1, 1980
A2	Complete purpose/goals/hypotheses, as outlined in Section 2.0 of this proposal.	An outline of the purpose, goals, and hypotheses related to the project will be drafted when project proposal is written.	Completed, Oct 1, 1980
A3	Determine data needs as outlined by Berdie & Anderson (1974) & Orlich (1978).	(Same as A-2)	Completed, Oct 1, 1980
A4	State objectives. Note section 2.0 of this proposal.	(Same as A-2)	Completed, Oct 1, 1980
A5	Update related literature. Note sections 1.0 and 3.0 of this proposal	(Same as A-2)	Completed, Oct 1, 1980
A6	Begin item construction as prosed by Babbie (1973), Berdie & Anderson (1974), Orlich (1978) and Warwick & Lininger (1975). These are presented in Appendix A.	A list of approximately 200 items will be generated with the literature review (A-5).	Completed, Oct 1, 1980
A7	Obtain endorsements; this request for funds represents such an attempt.	To be completed upon acceptance of grant proposal by B.E.H.	Completed, Oct 1, 1980
A8	Identify subject population; in this case special education and mainstream teachers in Vermont.	To be the end result of decision to use special education and mainstream teachers.	Completed, Oct 1, 1980
A9	Design sampling technique as proposed by Warwick & Lininger (1975) and discussed in the procedure section of this proposal.	This will be done prior to submission of grant proposal.	Completed, Oct 1, 1980

ACTIVITY NUMBER	DESCRIPTION OF PROJECT ACTIVITIES	DESIGN FOR EVALUATION OF OBJECTIVES/ACTIVITIES	CURRENT STATUS OF OBJECTIVES/ACTIVITIES
A10	Identify sample population, or Vermont special education and mainstream teachers.	This will be done upon acceptance of grant proposal and prior to mailing of the Teacher Stress Inventory.	Completed, Oct 1, 1980
A11	Begin sampling selection.	As in A-10.	Completed, Oct 10, 1980
A12	Complete sample list.	As in A-10.	Completed, Oct 1, 1980
A13	Develop revised draft of questionnaire instrument. Note Appendix B.	This will be completed upon organization of items into questionniare format.	Completed Oct 1, 1980
A14	Obtain review/critique of instrument from peers and experts (optional).	This will be completed prior to instrument revision.	Completed Dec/1980 Jan/1981
A20	Mail survey.	This will be completed when all surveys and return envelopes have been mailed to pre-selected respondents.	Completed, Nov. 7, 1980
A21	Tabulate initial returns.	This will be completed when all returns received prior to Jan. 1 have been key-punched.	Completed Jan 15, 1981
A22	Recycle steps A-20 and A-21 for May survey.	As in steps A-20 and A-21.	Completed, May 1, 1981
A23	Tabulate May returns.	This will be completed when all returns received prior to June 1 have been key-punched.	Completed, June 15, 198
A24	Send final follow-up as needed (optional).	----------	Completed June 15, 1981

ACTIVITY NUMBER	DESCRIPTION OF PROJECT ACTIVITIES	DESIGN FOR EVALUATION OF OBJECTIVES/ACTIVITIES	CURRENT STATUS OF OBJECTIVES/ACTIVITIES
A25	Finalize tabulations.	This will be completed when all returns received prior to June 14 have been received.	Completed, July 1, 1981
A26	Begin statistical tests.	This will be completed after the appropriate SPSS programs have been written and all returns have been tabulated.	Completed July 10, 1981
A27	Complete statistical tests.	This will be completed upon receipt of SPSS output.	Completed July 17, 1981
A28	Revise subscales.	This will be completed based upon results of statistical analysis.	Completed Aug 2, 1981
A29	Develop the final form of the Teacher Stress Inventory based upon questionnaire data.	Based upon revision of the survey data the final form of the survey will be developed.	Completed Aug 15, 1981
A30	Submit results for publication.	This will be completed by writing and submitting an article on the development of the Teacher Stress Survey.	Ongoing

cation and regular education teachers in Louisiana (McHardy, 1982) and urban regular education teachers in Brooklyn, N.Y. (Zackerman, 1982). Additionally: (a) the Inventory is being used in survey work in Buffalo, N.Y., sponsored by the State University of New York; (b) its use is being considered by six other doctoral students in their research work; and (c) a modified version of the Inventory has been adopted by Seaside Education Associates of Weston, Massachusetts, and has been used in workshops and needs assessments of human service provider vendors sponsored by the Massachusetts Department of Mental Health.

An additional 47 University-related requests for papers have been responded to, though these requests were for general information about stress and not for specific information about the Inventory.

Objective B

The second Objective of this study was to examine the relationships among the dependent variables, as defined by the subscale and total scale scores of the Teacher Stress Inventory, with a number of background personal and professional teacher variables. This was done by testing nine null hypotheses.

> Objective B: To determine the relationships among three personal and six professional special educa-

tion teacher variables and the sources and manifestations of teacher stress from among the survey data provided by special education and mainstream teachers in Vermont.

These data were examined by testing nine null hypotheses that were grouped by three types of analyses. The first two null hypotheses (NH1 and NH2) examined pretest-posttest differences, or how stress grew and changed for special education and mainstream teachers by the end of the 1980-81 public school year in comparison with stress levels as they existed at the beginning of the same public school year. Null Hypotheses 3, 4, and 5 examined the special education and mainstream teacher group differences with respect to each of nine personal and professional variables. Finally, Null Hypotheses 6 through 9 examined the extent and the fashion in which either the personal or the professional background variables explained the variance associated with the Teacher Stress Inventory subscales and scales.

As in Objective A, and as noted in Table 2, Objective B's procedures and activities ranged from October 1, 1980, to the present. Each of Objective B's activities were completed before or by the projected timeline dates (Activities B1 through B27) with the exception of Activities B28 (completed October 1, 1981), B29 (completed by March 1, 1982), and B30 (ongoing). Particularly in the case of Activity

B30, and as noted earlier in this report, a number of papers have been prepared and submitted and/or presented, and a number of others are currently being prepared.

In response to requests for survey information that originated from the participants of this and the pilot work, a total of 282 summary reports have been disseminated. These reports, which are somewhat shorter in scope and less detailed than this report, overviewed the major findings of the surveys.

Overview of Null Hypotheses 1 Through 9

The findings of this study are outlined below. For the purpose of clarity, Null Hypotheses 1 and 2, then 3, 4, and 5, and then 6, 7, 8, and 9 will be discussed in combination.

Findings Related to Null Hypotheses 1 and 2

Null Hypothesis 1: There are no significant pretest-posttest differences among the frequency or strength subscale[3] or total[4] scores of perceived teacher stress among special education teachers

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[3]Strength and frequency subscale scores include one each for the following stress factors: Professional Distress; Discipline and Motivation; Emotional Manifestations; Behavioral Manifestations; Physiological Manifestations; and Fatigue Manifestations.

[4]Total Scores included one each for the following full scale scores: Total Strength; Total Frequency; and Total Composite Scores.

TABLE 2

The Timeline and Procedures Related to Objective B

ACTIVITY NUMBER	DESCRIPTION OF PROJECT ACTIVITIES	DESIGN FOR EVALUATION OF OBJECTIVES/ACTIVITIES	CURRENT STATUS OF OBJECTIVES/ACTIVITIES
B1	As in A-1.	As in A-1.	As in A-1.
B2	Propose a number of examinations among the categories of variables.	This will be completed prior to and included in the writing of the grant proposal.	Completed Oct 1, 1980
B3	Through B-21. As in A-3 through A-27, excluding B-19/A-19.	Through B-27. As in A-3 through A-27, excluding B-19/A-19.	Through B-27. As in B-3 through B-27, excluding B-19/A-19.
B19	Plan and select analysis techniques and statistical data.	This will be completed prior to and included in the writing of the grant proposal. Note section 5.2.	Completed, Jan 1, 1981
B28	Interpret results.	Interpretations will be based upon results of statistical analysis.	Completed, Oct 1, 1981
B29	Prepare figures/tables.	As in B-28.	Completed, March 1, 198
B30	Submit results for publication.	This will be completed by writing and submitting an article(s) based upon results of the survey.	Ongoing

Null Hypothesis 1 focused on special education teachers' perceived stress levels at the end of the 1980-81 school year, in comparison to those reported by the same special education teachers at the beginning of that school year. The results of these findings are summarized in Table 3, the status summary of findings related to Null Hypotheses 1 and 2.

Finding 1

Null Hypothesis 1 was rejected when special education teacher pretest and posttest scores were compared only with respect to their perceptions of the strength of Discipline and Motivation. These teachers did not differ with respect to the pretest/posttest comparisons made for Professional Distress, the Emotional, Behavioral, Physiological and Fatigue Manifestations of stress, and the Total Frequency, Total Strength, and Total Composite measures of experienced Stress.

> Null Hypothesis 2: There are no significant pretest-posttest differences among the frequency and strength subscale or total scale scores of perceived teacher stress among mainstream teachers.

Null Hypothesis 2 focused on mainstream teacher's perceived stress levels at the end of the 1980-81 school year in comparison to those reported by the same mainstream

TABLE 3

Status Summary of Findings Related to Hypotheses 1-2

Dependent Variables	Special Education Teachers	Mainstream Teachers
	H1	H2
FREQUENCY MEASURES		
Professional Distress	FR	FR
Discipline and Motivation	FR	FR
Emotional Manifestations	FR	FR
Behavioral Manifestations	FR	FR
Physiological Manif's	FR	FR
Fatique Manifestations	FR	FR
STRENGTH MEASURES		
Professional Distress	FR	FR
Discipline and Motivation	R	FR
Emotional Manifestations	FR	R
Behavioral Manifestations	FR	FR
Physiological Manif's	FR	R
Fatique Manifestations	FR	R
TOTAL SCALE MEASURES		
Total Frequency	FR	FR
Total Strength	FR	R
Total Composite	FR	FR

R = Reject Null Hypothesis
FR = Fail to Reject Null Hypothesis

teachers at the beginning of that school year. The results of these findings are summarized in Table 3, the status summary of findings related to Null Hypotheses 1 and 2.

Finding 2

Null Hypothesis 2 was rejected when mainstream teacher pretest/posttest scores were compared with respect to their perceptions of the strength of Emotional, Physiological, and Fatique Manifestations, and with respect to the Total Strength with which they experienced stress. The mainstream teachers did not differ with respect to their perceptions of the frequency of any stress factor, the Total Frequency and Total Composite measures of stress, and the strength with which Professional Distress, Discipline and Motivation, and the Behavioral Manifestations of stress were perceived to have occurred.

Findings Related to Null Hypothesis 3

> Null Hypothesis 3: There are no significant differences among the means of strength subscale scores of special education and mainstream teachers grouped according to levels of background personal[5] and professional[6] variables.

Null Hypothesis 3 focused on special education and mainstream teachers' perceptions of the strength of teacher stress. The results of these findings are summarized in Table 4, the status summary of findings related to Null

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[5]The personal variables are teacher sex, age, and level of educational achievement.

[6]The professional variables are the size of the community, length of teaching experience, grade level taught, type of student, type of classroom, and number of students.

Hypotheses 3, 4, and 5.

Finding 3

Null Hypothesis 3 was rejected when special education and mainstream teachers were grouped according to sex, age, education level, community size, years of experience, student type, and student number. Special education and mainstream teachers, when grouped by grade level and classroom type did not differ in their perceptions of the strength of teacher stress.

Finding 4

Teacher Sex. When special education and mainstream teachers were grouped by levels of the personal variable sex, it was evident that the stress resulting from Discipline and Motivation issues was strongest in male and female mainstreeam teachers, was somewhat less so in male special education teachers, and was significantly less so in female special education teachers.

Finding 5

Teacher Age. When special education and mainstream teachers were grouped according to age, it was evident that: (a) young mainstream teachers, aged 19-29, experienced

TABLE 4

Status Summary of Findings Related to Hypotheses 3-5

Dependent Variables	Personal Variables			Professional Variables					
Independent Variables	Teacher Sex	Teacher Age	Education Level	Community Size	Experience	Grade Level	Student Type	Classroom Type	Student Number
STRENGTH MEASURES[a] (Hypothesis 3)	R	R	R	R	R	FR	R	FR	R
FREQUENCY MEASURES[a] (Hypothesis 4)	R	R	R	R	R	FR	FR	FR	R
TOTAL SCALE MEASURES[b] (Hypothesis 5)									
Total Frequency	FR	FR	R	FR	FR	FR	R	FR	R
Total Strength	FR	R	R	FR	R	FR	R	FR	R
Total Composite	FR	R	R	FR	FR	FR	R	FR	R

R = Reject Null Hypothesis
FR = Fail to Reject Null Hypothesis
a. Rejection or failure to reject the hypotheses related to the TSI subscale scores is based on the MANOVA F values.
b. Rejection or failure to reject the hypotheses related to the TSI total scores is based on the ANOVA F values.

stress associated with Discipline and Motivation and the Emotional and Physiological Manifestations as being significantly less strong than did any other teacher group; (b) the young mainstream teachers experienced significantly less strong Professional Distress than did the older and middle-aged special education and mainstream teachers; and (c) the young special education teachers, aged 19-29, experienced significantly stronger Professional Distress than did the older special education and the young mainstream teachers.

Finding 6

Teacher Education Level. When special education and mainstream teachers were grouped by education level, it was evident that: (a) bachelors-level special education teachers experienced Professional Distress as being significantly stronger than that reported by the advanced-degree special education and the bachelors-level mainstream teachers; and (b) the advanced-degree special education teachers differed significantly from each of the other five education level groups by reporting significantly weaker stress associated with Discipline and Motivation than did each of the other teacher groups.

Finding 7

Community Size. When special education and mainstream teachers were grouped by level of community size it was evident that: (a) rural special education teachers experienced significantly weaker Professional Distress than did the rural and suburban mainstream teachers; (b) the rural special education teachers experienced significantly stronger Emotional Manifestations than did any of the mainstream teacher groups, and significantly stronger Fatigue Manifestations than did the rural mainstream teachers; and (c) the suburban special education teachers experienced significantly stronger Professional Distress than did all of the mainstream teachers, and significantly stronger Emotional Manifestations than did the rural and suburban mainstream teachers.

Finding 8

Teaching Experience. When special education and mainstream teachers were grouped according to levels of teaching experience it was evident that: (a) the less-experienced (<5 years) mainstream teachers perceived significantly stronger Professional Distress than did the more experienced special education teachers; and (b) the moderately-experienced (6-10 years) special education teachers perceived sig-

nificantly stronger Professional Distress than did their more-experienced (>10 years) special education and mainstream teacher colleagues.

Finding 9

Student Category. When special education and mainstream teachers were grouped by level of the type of student that they teach, the following was evident: (a) special education teachers teaching either handicapped or both handicapped and nonhandicapped students experienced significantly stronger Professional Distress than did the mainstream teachers of either nonhandicapped or both handicapped and nonhandicapped students; (b) special education teachers of handicapped and nonhandicapped students experienced significantly stronger Emotional and Fatigue Manifestations than was experienced by mainstream teachers of nonhandicapped students or of both handicapped and nonhandicapped students; (c) special education teachers of handicapped students experienced significantly stronger Emotional and Fatigue Manifestations than did both groups of mainstream teachers who teach either nonhandicapped or both handicapped and nonhandicapped students.

Finding 10

Student Number. When special education and mainstream teachers were grouped by the number of students taught, the following was evident: (a) mainstream teachers of small-groups (2 to 19 students) experienced significantly weaker Professional Distress than did the teachers in the small- or large-group (20+) special education and the large-group mainstream groups; (b) small-group mainstream teachers experienced significantly weaker stress associated with Discipline and Motivation than did the teachers in the small- and large-group special education and mainstream teachers; (c) small-group special education teachers experienced significantly weaker stress associated with Discipline and Motivation than did the large-group special education and mainstream teachers; and (d) being a small-group mainstream teacher results in significantly weaker Emotional, Behavioral, Physiological, and Fatigue Manifestations when compared with the large- or small-group special education and the large-group mainstream teachers.

Findings Related to Null Hypothesis 4

Null Hypothesis 4: There are no significant differences among the means of frequency subscale scores of special education and mainstream teachers grouped according to levels of background personal[7] and professional[8] variables.

Null Hypothesis 4 focused on special education and mainstream teachers' perceptions of the frequency of teacher stress as defined by the TSI subscales. The results of these findings are summarized in Table 4, the status summary of findings related to Null Hypotheses 3, 4, and 5.

Finding 11

Null Hypothesis 4 was rejected when special education and mainstream teachers were grouped according to sex, age, education level, community size, years of experience, and student number. Special education and mainstream teachers, when grouped according to grade level, student type, and classroom type, did not differ in their perceptions of the frequency of teacher stress.

Finding 12

Teacher Sex. When special education and mainstream teachers were grouped by sex, it was evident that: (a) the frequency with which discipline and motivation problems occurs is greatest in male and female mainstream teachers, is somewhat less so in male special education teachers, and

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[7]The personal variables are sex, age, and level of educational achievement.

[8]The professional variables are the size of the community, length of teaching experience, grade level taught, type of student, type of classroom, and number of students.

is significantly less so in female special education teachers.

Finding 13

Teacher Age. When special education and mainstream teachers were grouped by age, it was evident that: (a) Professional Distress was most frequently experienced by young (20-29) mainstream education teachers, and was experienced by these teachers significantly more often than it was by middle-aged (30-39) and older (40 years or over) special education teachers and older mainstream teachers; and (b) the young and older mainstream teachers experienced Discipline and Motivation related stress significantly more often than did the middle-aged special education teachers, who experienced it the least often.

Finding 14

Education Level. When special education and mainstream teachers were grouped by levels of acquired education, it was evident that: (a) the advanced-degree special education teachers experienced Professional Distress significantly less often than did the bachelors-level special education teachers; (b) the advanced-degree special education teachers experienced significantly less frequent stressful events

related to Discipline and Motivation than did the bachelors-level special education and mainstream teachers and the advanced-degree mainstream teachers; and (c) the bachelors-level special education teachers experienced Fatigue and Manifestations significantly more often than did either the bachelors-level mainstream teachers.

Finding 15

Community Size. When special education and mainstream teachers were grouped by community size, it was evident that: (a) the urban mainstream teachers experienced stress associated with Discipline and Motivation issues significantly more often than did the three (rural; suburban; urban) special education groups and the suburban mainstream teacher group; and (b) the rural mainstream teachers reported significantly more frequent occurrences of stress related to Discipline and Motivation than did their rural special education counterparts.

Finding 16

Teaching Experience. When special education and mainstream teachers were grouped by levels of teaching experience, it was evident that: (a) special education teachers with 10 or more years experience experienced significantly

less frequent Professional Distress than did special education and mainstream teachers with one to five years experience; (b) the special education teachers with five or less years experience experienced significantly more frequent Professional Distress than did special education teachers with six or more years experience or mainstream teachers of 10 or more years experience; and (c) special education teachers with six to nine years experience reported significantly less frequent stress associated with Discipline and Motivation than did mainstream teachers with one to five years or 10 or more years experience.

Finding 17

Student Number. When special education and mainstream teachers were grouped by levels of student number, it was evident that: (a) the small-group (2-19) mainstream teachers experienced significantly less frequent Professional Distress and Discipline and Motivation related stress, than did the small- or large-group (20+) special education teachers and the large-group mainstream teachers; and (b) the small-group special education teachers experienced stress associated with Discipline and Motivation significantly less often than did the large-group special education and mainstream teachers.

Findings Related to Null Hypothesis 5

> Null Hypothesis 5: There are no significant differences among the means of the Total Strength, Total Frequency, or Total Composite Scores of special education and Mainstream teachers groups according to the levels of background personal[9] and professional[10] variables

Null Hypothesis 5 focused on special education and mainstream teachers' perceptions of the frequency of teacher stress as defined by the TSI total scale scores. The results of these findings are summarized in Table 4, the status summary of findings related to Null Hypotheses 3, 4, and 5.

Finding 18

Null Hypothesis 5 was rejected for all scale scores when special education teachers were grouped according to education level, student type, and student number. Additionally, Hypothesis 5 was rejected for the Total Strength (teacher age; years experience) and Total Composite (teacher age) Scores. Special education and mainstream teachers, when grouped according to teacher sex, community size, grade level and classroom type, did not differ in their overall

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[9]The personal variables are sex, age, and level of educational achievement.

[10]The professional variables are community size, teaching experience, grade level, student type, classroom type, and number of students.

perceptions of the Total Strength, Total Frequency, and Total Composite measures of teacher stress.

Finding 19

Teacher Age. When special education and mainstream teachers were grouped by age, it was evident that: (a) young mainstream teachers experienced the Total Strength of stress as being significantly less stong than did any other teacher age group; and (b) young mainstream teachers experienced stress significantly less than did the other teacher age groups, in terms of the frequency-by-strength interaction, or the Total Composite Score.

Finding 20

Education Level. When special education and mainstream teachers were grouped according to level of education, it was evident that: (a) with respect to the Total Frequency Score, bachelors-level special education teachers experienced stressful events significantly more often than did the advanced-degree special education and bachelor's level mainstream teachers; (b) with respect to the Total Strength Score, the advanced-degree special education teachers experienced significantly weaker stress than did either the bachelors-level special education or the mainstream teacher

groups; and (c) with respect to the Total Composite Score, the advanced-degree special education teachers reported significantly less Total Composite Stress than did any of the other three education level teacher groups.

Finding 21

Teaching Experience. When special education and mainstream teachers were grouped by level of years teaching experience, it was evident that: (a) with respect to the Total Strength Score, the inexperienced (1-5) mainstream teachers perceived significantly stronger levels of stress than did the moderately experienced (6-9 years) special education teachers; and (b) the overall strength of stress for both the special education and mainstream teachers was greatest during the first five years of teaching and decreased, sometimes significantly so, after that.

Finding 22

Student Type. When special education and mainstream teachers were grouped according to the type of student they taught, it was evident that: (a) with respect to each of the three total stress measures, the special education teachers of handicapped and nonhandicaped students experienced significantly greater overall stress in comparison to both

mainstream teacher groups or those who work only with nonhandicapped and those who teach both handicapped and nonhandicapped students; and (b) with respect to the Total Frequency and the Total Strength Scores of teacher stress, the special education teachers of only handicapped students reported experiencing significantly stronger and significantly more frequent stress in comparison to both mainstream teachers and/or nonhandicaped students.

Finding 23

Student Number. When special education and mainstream teachers were grouped by the number of students whom they teach, it was evident that: (a) with respect to the Total Frequency, Total Strength, and Total Composite Scores, being a mainstream teacher assigned to a relatively small class or caseload (2-20 students) results in significantly less stress strength, stress frequencey, and overall stress than that which is experienced by large-group (20+ students) and small-group special education and large-group mainstream teachers.

Findings Related to Null Hypothesis 6

Null Hypothesis 6: There are no relationships among the frequency or strength subscale scores of the combined special education and mainstream teachers with select personal[11] variables.

Null hypothesis 6 focused on the relative contribution of the personal variables of teacher sex, age, and education level to each of the six strength and six frequency subscales of the TSI. The results of these findings, in terms of the rejection of, or the failure to reject Null Hypothesis 6 is shown in Table 5, the status summary of findings related to Null Hypotheses 6 and 7.

Finding 24

(a) Null Hypothesis 6 was rejected for each of the TSI subscales when the variables sex, age, and education level were entered into the explanatory model for each of the subscales. In each case, two or more variables accounted for a significant amount of the variation associated with the stress subscales.

(b) The personal variable age accounted for the greatest amount of variation in each of the TSI subscales (2% to 30%), while education level accounted for the next greatest amount (1% to 4%), and sex accounted for the least significant amount (0% to 2%) of variation associated with the TSI subscales.

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[11]The personal variables are sex, age, and education level.

TABLE 5

Status Summary of Findings Related to Hypotheses 6-7

Dependent Variables	Personal Variables	Professional Variables
	H6	H7
FREQUENCY MEASURES		
Professional Distress	R	R
Discipline and Motivation	R	R
Emotional Manifestations	R	R
Behavioral Manifestations	R	R
Physiological Manifest's	R	R
Fatique Manifestations	R	R
STRENGTH MEASURES		
Professional Distress	R	R
Discipline and Motivation	R	R
Emotional Manifestations	R	R
Behavioral Manifestations	R	R
Physiological Manifest's	R	R
Fatique Manifestations	R	R

R = Reject Null Hypothesis
FR = Fail to Reject Null Hypothesis

(c) The personal variables sex, age, and education level accounted for 2% to 34% of the total explained variation associated with each of the two measures of each of the six ISI subscales.

Findings Related to Null Hypothesis 7

> Null Hypothesis 7: There are no relationships among the frequency or strength subscale scores of the combined special education and mainstream teachers with select professional variables.

Null Hypothesis 7 focused on the relative contribution of the Professional variables[12] to each of the six strength and six frequency subscales of the TSI. The results of these findings in terms of the rejection of, or the failure to reject Null Hypothesis 7 is shown in Table 5, the status summary of findings related to Null Hypotheses 6 and 7.

Finding 25

(a) Null Hypothesis 7 was rejected for each of the TSI subscales when the variables grade level, classroom type, teaching experience, student number, student category, and community size were entered into the explanatory model for each of the subscales. In each case, two or more variables accounted for a significant amount of the variation associated with the stress subscales.

(b) The professional variable classroom type accounted for the greatest amount of variation in each of the TSI subscales (1% to 39%), while teaching experience (0% to 10%)

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[12]The professional variables are classroom type, community size, years experience, grade level, student type, and student number.

and grade level (0% to 8%) accounted for the next greatest amounts of variation associated with the TSI subscales. The remaining variables, teaching experience, student-category and community size accounted for a small (0% to 6%) though sometimes significant, amount of the remaining variation.

(c) The six professional variables accounted for 3% to 50% of the total explained variation associated with each of the two measures of each of the six TSI subscales.

Findings Related to Null Hypothesis 8

> Null Hypothesis 8: There are no relationships among the Total Strength, Total Frequency, or Total Composite Scores of the combined special education and mainstream teachers with select personal variables.

Null Hypothesis 8 focused on the relative contribution of the personal variables of sex, age, and education level to each of the three total stress scale scores of the TSI: Total Frequency; Total Strength; and Total Composite Scores. The results of these findings, in terms of the rejection of, or the failure to reject Null Hypothesis 8 is shown in Table 6, the status summary of findings related to Null Hypotheses 8 and 9.

TABLE 6

Status Summary of Findings Related to Hypotheses 8-9

Dependent Variables	Personal Variables	Professional Variables
	H8	H9
TOTAL SCALE MEASURES		
Total Frequency	R	R
Total Strength	R	R
Total Composite	R	R

R = Reject Null Hypothesis
FR = Fail to Reject Null Hypothesis

Finding 26

(a) Null Hypothesis 8 was rejected for each of the TSI total scores when the variables sex, age, and education level were entered into the explanatory model for each of the scale scores. In each case, the three variables acounted for a significant amount of variation associated with the total scale scores.

(b) The professional variable age accounted for the greatest amount of variation in each of the TSI total scores

(17% to 29%), while education level (1% to 3%) and sex (1% and 1%) acounted for the next greatest amount of variation, respectively.

(c) The three personal variables accounted for 19% (Total Frequency), 25% (Total Composite), and 33% (Total Strength) of the total explained variation associated with each of the three total scores.

Findings Related to Null Hypothesis 9

> Null Hypothesis 9: There are no relationships among the Total Frequency, Total Strength, or the Total Composite Scores of the combined special education and mainstream teachers with select professional variables.

Null Hypothesis 9 focused on the relative contribution of the professional variables of classroom type, community size, years experience, grade level, student type, and student number to each of the three total scale scores of the TSI: Total Frequency; Total Strength; and Total Composite Score. The results of these findings in terms of the rejection of, or the failure to reject Null Hypothesis 9 is shown in Table 6, the status summary of the findings related to Null Hypotheses 8 and 9.

Finding 27

(a) Null Hypothesis 9 was rejected for each of the TSI full scale scores when the variables grade level, classroom type, teaching experience, student number, student category, and community size were entered into the explanatory model for each of the three scale scores. In each case, three to six variables accounted for a significant amount of the variation associated with the stress scale scores.

(b) The professional variable classroom type accounted for the greatest amount of variation in each of the three TSI scale scores: 22% (Total Frequency); 28% (Total Composite); and 37% (Total Strength), while grade level (3% to 6%) and student number (3% to 6%) accounted for the next greatest amounts of variation associated with the TSI scale scores. The remaining variables, teaching experience, student category, and community size accounted for a small (0% to 1%), though sometimes significant, amount of the remaining variaton.

(c) The six professional variables accounted for 31% (Total Frequency), 39% (Total Composite), and 50% (Total Strength) of the total explained variation associated with each of the three TSI scale measures.

General Recommendations

Perceived teacher stress is a phenomenon of increasing concern. This study was conducted to examine stress and its effects upon special education and mainstream teachers. The findings point to several areas in which both practitioners and researchers can become more active. Insofar as most stress-identification strategies and stress-reduction interventions have been directed at the symptoms rather than at the underlying sources of stress, the need for cooperative efforts between the practitioner and the researcher is greater now than ever before.

Because the study of stress in special education and regular teachers is a relatively new endeavor, a number of future directions for the research are becoming increasingly evident. Among others, these include: (a) the identification of the assumptions related to the study and management of teacher stress; (b) the development of empirically based preservice and inservice stress management programs; and (c) the identification of a number of recommendations for additional empirical research (Fimian, 1982b).

Identification of Assumptions

The identification of assumptions related to the study and management of stress and burnout is an important first step in the problem-solving process. A number of these assumptions are outlined in Table 7, an overview of the assumption related to the study of stress and burnout. As basic as these ideas may seem, they are not often clearly articulated to the teacher or teacher populations under stress. As a result "many misconceptions exist that lead people to react inappropriately to their efforts to cope with daily stressors" (Greenberg and Valletutti, 1980, p. 10). Among others, these misconceptions include the ideas that all teachers are under unmanageable amounts of stress, that stress occurs to teachers and helping professionals only because of the "people-work" nature of their jobs, that being ambitious means being burned out, that having a high degree of responsibility results in burnout, and that long hours will guarantee burnout.

The Development of Data Based Interventions

Effective preservice and inservice programs and other training opportunities are needed for teachers and school administrators. These should be designed to equip school personnel with the problem solving skills that would enable

TABLE 7

Assumptions Related to the Study and Management of Stress

A. STRESS EXISTS IN ONE'S JOB.

1. Too little can be harmful or counter-productive.
2. Too much can be harmful or counter-productive.
3. A balance can be helpful to the individual, and productive from a system's perspective.

B. STRESS CAN BE MANAGED IN A NUMBER OF WAYS.

1. Stress can be operationally defined, and thus measured.
2. Stress sources and manifestations can be identified, and then modified and maintained.
3. Stress can be ignored or attended to.
4. The system can change; the individual can change; or both the system and the individual can change.

C. STRESS MAY OR MAY NOT BE A PROBLEM.

1. The questions that are asked about stress should be related less to the "problem" of stress, and more to issues of the degree to which it is a problem and the frequency with which it is a problem, if it is a problem at all/

D. ALL TEACHERS ARE UNDER, WILL CONTINUE TO BE UNDER, AND SHOULD BE UNDER AT LEAST SOME DEGREE OF STRESS.

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them to identify and manage their own stress levels. This entails the development of training programs that would go beyond the typical watch-out-for-stress-before-it-kills-you workshop routine. Given valid and reliable options for measuring various stress and burnout constructs, it should

be possible to use a systematic approach to identify and solve stress- and burnout-related problems. This methodology would include:

1. The identification of needs -- including the empirical determination of the discrepancy between "what is" (as was done in this study) and "what should be" (as would be determined cooperatively among groups of teachers and administrators);

2. The identification of resources -- including the identification of the materials, personnel, financial resources and procedures that could effect change within the system or within the individual.

3. The selection and implementation of change strategies -- based on the availability of resources, the willingness of the system to change, and also the commitment of the individuals within the system to change;

4. The evaluation of the presence, absence, or degree of success -- or the determination of the worth of the stress reduction or change strategies that have been used; and

5. The revision of interventions -- including the choice of modifying or terminating existing strategies and/or establishing other viable stress-reduction alternatives, based on data collected on a formative or ongoing basis (after Gallery, Eisenbach, and Holman, 1981).

Presently, there are dozens of stress reduction and stress management strategies that have been outlined in the popular psychology literature. Though these have not yet been tested, they do provide a wealth of ideas and techniques from which to choose. Successful implementation of this type of technical assistance would require the cooperation of practitioners such as workshop presenters, "stress counselors", and consultants who are willing to be held accountable for the stress reduction strategies that they espouse.

Additional Empirical Research

Additional empirical research concerning stress and its effects upon special education and regular teachers is needed. These activities could entail:

1. Refining old and developing new conceptual and psychometric definitions of stress and burnout.

2. Obtaining a consistency of measurement and terminology that would take into consideration the measure and use of varied stress and burnout constructs, yet explain the interrelationships, if any, among these. For example, the MBI and the TSI measure different factors associated with stress and burnout, but they do so with a very similar two-dimension scale that accounts for both the frequency and strength/intensity of stressful event occurrence. Asking the "same questions" about different constructs may help researchers to better understand the relationships among them.

3. Based on the previous point, opening and maintaining lines of communication among stress researchers before research projects are conducted. This would allow for cooperative projects and for the future access of data by other interested researchers. These data could then be used for alternative and meta analyses. This activity would address both pragmatic concerns (such as the structure of data files) as well as those of a more abstract nature (such as more clearly defining the constructs being measured).

4. Continuing the two research emphases that are presently becoming dominant in stress research: one of which deals with "captive" workshop subject populations; the second of which entails the use of large randomly-selected teacher populations. The traditional distinction between "ecological" and "laboratory" research needs to be addressed -- particularly insofar as "laboratory" teacher samples are becoming increasingly difficult to access and "ecological" samples are becoming more numerous. Additionally, attempts should be made to identify and obtain access to populations of teachers who report that they are not burned out or who are not experiencing stress. Comparisons between the two groups will allow investigators to develop a clearer picture of the phenomena of teacher stress and burnout.

5. Based on the previous point, increasing the numbers and types of stress research studies. Increasing this number would make more valid the generalizability of the findings; increasing the types would result in quantitative studies, in-depth qualitative studies, and combinations thereof.

6. Emphasizing stress research that incorporates a multivariate perspective. Presently, investigators have access to a number of "local models" which are defined in terms of one or more stress factors: The MBI stresses three such factors, the TSI measures six, and others define one each (Cichon and Koff, 1980; Pines, et al., 1981). Through additional cooperative research efforts it may be possible to establish a more general and unifying theoretical paradigm that would include elements of all of these and possibly other stress and burnout models. Such collaborative efforts to understand and operationalize burnout and its stressful precursers would benefit not only special educators, but also regular educators and the students that each serves.

7. Adapting the use of the survey model of assessment that is currently being used. This will allow for time series and longitudinal studies. It is commonly accepted that stress "grows and changes" with time, yet few have measured in what fashion and to what extent these changes actually do occur.

8. Developing a means of including verified stress reduction and management techniques as part of teacher training programs. Then, based on these groups of teachers, longitudinal studies can be established that would track them and their matched control groups for a number of years, in order to determine whether or not the strategies actually do help teachers manage stress levels.

Conclusion

Much has been said and written about the identification and management of stress and burnout during the late 1970s and early 1980s. Only recently, however, have attempts been made to do this on a psychometrically sound basis. Using various conceptualizations and constructs of stress and burnout over the last five years, survey researchers and other investigators have been able to establish the exploratory foundations for the research to come in the 1980s. By concentrating more on the "laboratory" aspects of defining and identifying the stress and burnout constructs, enough advance have been made that the research can now become much less "laboratory-like" and much more "ecologically oriented. By using the measurement concepts and constructs that presently exist, practitioners are now able to identify and

solve stress- and burnout-related problems with a degree of accountability.

Education is currently undergoing numerous changes. If any of these are stress-related, or if any result in increased incidences of burnout, only future investigations will tell. For the present, however, numerous advances have been, and are being, made in the understanding of the nature and extent of the phenomena of stress and burnout.

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